Brookhaven National Laboratory (BNL)

Site Office Manager Perspective:
Three areas of concern have been brought to the attention of BSA senior management: injury rates – DART and TRC; deficiencies in safety basis documentation, and; emergency planning and preparedness.

Despite progress in the laboratory's ISM/Safety Improvement Program, and achieving site-wide OSHAS 18001 certification, DART and TRC rates have increased during the reporting period. BHSO has found that the injuries are not occurring during high risk activities or due to a lack of work planning. The types of injuries that are driving up the DART rate are often sprains and strains resulting from routine activities, such as entering or exiting a vehicle. In most cases, BSA aggressively manages the cases to provide reasonable care and the patient's return to work. However, in many cases, the individual chooses to seek further treatment through their physician often resulting in prescribed medication or therapeutic care which makes the event DART reportable. While BHSO and BSA believe that effective work controls are in place at the laboratory, we are focused on determining if the controls are being used by individuals uniformly and at all levels of work activities. In addition, since recent injuries have resulted from routine activities not unique to BNL operations, BHSO is urging BSA to focus on initiatives to implement a 24/7 safety culture utilizing human performance tools, which BSA has positively responded to.

In the second quarter of FY07, BSA submitted a Documented Safety Analysis (DSA) for the Waste Management Facility, a Hazard Category 3 nuclear facility. This DSA did not meet DOE requirements and standards for nuclear safety analysis. BHSO also recognized an issue with the safety basis documentation for the EM reactor D&D project and as a result raised the issue of safety basis documentation concerns to BSA senior management. BHSO and BSA have also worked with SC (Carol Sohn) and Integrated Support Center nuclear safety experts to address the concerns. BSA has developed an action plan that BHSO concurs with. This action plan includes a safety evaluation and a June 29, 2007 delivery of a path forward to achieve an approvable DSA.

BSA has also struggled to improve the laboratory's Emergency Management program for several years and to date has only made incremental improvements. As a result, BHSO also raised Emergency Management as a concern to BSA senior management. BHSO adjusted BSA's performance evaluation downward for FY06 and has graded BSA's Emergency Management performance as "red" for their first FY07 triennial performance review. BHSO has previously assisted BSA by arranging an "Assist Visit" consisting of an on-site consultation by representatives of DOE's Office of Emergency Management (NA-41) and Office of Emergency Management Oversight (HS-63). At BHSO's request last quarter, BSA prepared a project schedule outlining the path to full compliance with DOE Emergency Management requirements. This schedule is currently being evaluated as part of a BSA Emergency Management Self Assessment (conducted by an independent contractor), and assist visit by representatives of Oak Ridge National Laboratory.

BSA's site-wide Environmental Management System (EMS), which is ISO14001 certified, continues to perform at a nationally recognized level. BSA has been recognized by USEPA thru election as a USEPA Performance Track site. As part of the Performance Track program, BSA

has utilized their EMS to implement additional environmental projects, including, forest recovery, radiological air emissions reduction, reduction of mercury and PCB inventories, recovery of ozone depleting substances, and leadership in electronics recycling. BSA has also assisted other Office of Science sites (Oak Ridge) during this time period, by assisting them with their internal EMS audit.

Significant Trends:
The second quarter of FY 2007 showed a significant increase in DART cases. Senior management reviewed these cases and there appears to be no correlating factors that explain the increase. Notably, several of the new cases were soft tissue injuries related to back strains, but none of these appeared to be due to poor work planning. As many of the injuries this year are associated with "life activities," a renewed focus will be placed on maintaining awareness and promoting "safety and wellness 24/7." BSA is benchmarking "Safety 24/7" initiatives at other DOE Laboratories, including Idaho National Laboratory, Pacific Northwest Laboratory and Oak Ridge Laboratory, to take advantage of Lessons Learned implementing their programs.

-Days Away Restricted, Transfer (DART): 0.74 (9 DART cases)
-Total Recordable Case Rate (TRC): 1.32 (16 recordable cases)
-Occurrence Reporting (ORPS): 12 reports (6 in 1st Quarter, 6 in 2nd Quarter)

ES&H Issues:

Major ES&H Issue:
Nuclear Safety: Inadequate configuration control of the High Flux Beam Reactor (HFBR) Authorization Basis Documents (ABDs) identified in the 1st Quarter of FY 07 in addition to a PISA and USQ concerning Waste Management Facility Documented Safety Analysis identified in 2nd Quarter of FY 07 is a concern. These conditions were reported via ORPS. An Extent of Condition review was initiated and is being managed by the Assistant Laboratory Director for Environment, Safety, Health and Quality. It is expected that this report will be issued by May 21, 2007.

Noncompliance Tracking System (NTS) Reports:
Three NTS Reports were issued during this period.

- **NTS--BHSO-BNL-BNL-2006-0002, "Painter Contacts Abandoned Live Electrical Wire."** This was an event driven report that was issued December 13, 2006 to report a near miss involving a BNL painter who contacted an abandoned, energized 110 Vac wire while spackling walls in Bldg 490. Corrective actions were focused primarily on training and lessons learned. All corrective actions have been completed.

- **NTS--BHSO-BNL-BNL-2007-0001, "Silica Exposure during Concrete Crushing Operation."** This was an event driven report that was issued February 1, 2007 to report that two contractor were overexposed to silica (quartz) dust while they performed concrete crushing machine work using their own machinery at BNL. Corrective action involve stricter controls on use of full face respirator and exposure monitoring during concrete crushing activities. Four of 5 corrective actions have been completed. The last one is scheduled for completion 6/07.

- **NTS--BHSO-BNL-BNL-2007-0002, "Unreviewed Safety Question at WMF."** This was an assessment driven report that was issued March 26, 2007 as a result of a DOE annual review of the the BNL Waste Management Facility

Documented Safety Analysis (DSA) and Technical Safety Requirements (TSR). The DOE report stated that the DSA/TSR does not meet the requirements of 10CFR830 Subpart B and DOE-STD-3009-94, Change Notice 3 because it does not demonstrate proper hazard identification, analysis and control. A positive USQ was declared to recognize the potential for unanalyzed hazards. The condition is under evaluation by BSA.

ES&H related findings of Inspector General Reports: None.

Initiatives to Enhance Safety Performance:

- Brookhaven National Laboratory (BNL) achieved OHSAS 18001 certification in December 2006. BNL is the first Lab in the DOE complex to achieve both ISO 14001 and OHSAS 18001 certification.
- In response to the Arc Flash event in spring of 2006 BNL hired a Human Performance consultant to lead a Human Performance Improvement (HPI) Assessment of this event. The results of this assessment were instrumental in the development of preventive actions taken in response to this event, and provided the Laboratory with an example of HPI implementation.
- A white paper discussing HPI Implementation strategy options at BNL was prepared at the end of 1st Quarter of FY 07 and provided to the Laboratory Director, who is very interested in pursuing HPI at BNL. In April 2007 Earl Carnes and Mike Schoener (DOE-HSS) and Rob Fisher (Fisher Improvement Technologies) were at BNL to speak with a cross section of managers about HPI and how best to implement HPI. They are using the information they learned in their discussions to further refine the white paper strategy document. This will be reviewed with the Laboratory Director in May. This visit also included an 8 hour overview of HPI concepts to 30 people, both DOE and BNL employees.

- Progress has been made implementing the workplace safety observation program:
    - Senior management made individual commitments to the Lab Director for meeting his expectations for safety observations,
    - the database was modified to allow easier tracking of progress, and
    - the second quarter showed a significant increase in the number of observations performed each month. A total of 633 observations have been recorded for FY2007.

During the third quarter the data will be examined for trends, specifically regarding behaviors adverse to good safety practices.

Summary of Oversight Activities:

Brookhaven Site Office

- Assessment: Material Handling. This assessment focused on the handling materials, including Preventative Maintenance concerns regarding the removal of equipment from service when tagged 'Out of Inspection'**.** (2 Findings)
- Assessment: Conduct of Operations (participated with BSA). This assessment was joint with BNL and included Lock Out/Tag Out (LO/TO), instrument calibration, training and operator aids. (8 Findings related to programmatic compliance)

- Assessment: Laser Safety. This assessment focused on Corrective Action Verification and Effectiveness. Corrective actions were verified to complete.
- Assessment: Type B Arc Flash Corrective Action Verification. This assessment focused on Corrective Action Verification and Effectiveness. Corrective actions were verified to complete.
- Assessment: Emergency Management Program & Emergency Response Organization
- Surveillance: Lock Out/Tag Out (Findings)
- Surveillance: Electrical Configuration for extension cables and pendants. (2 Findings)
- Surveillance: Radiation Protection - Environmental Restoration Projects. This surveillance focused on conduct radiological work practices. (No Findings)
- Surveillance: Radiation Protection - Temporary Shielding. This surveillance focused on the management and implementation of temporary shielding. (2 Findings)
- Surveillance: Hazardous Waste (RCRA). (No Findings)
- Surveillance: Fire Rescue Work Planning. (No Findings)

Corrective actions that flowed from assessments and surveillances are captured in the Brookhaven Site Office SMART database. There were no major Findings identified.

Laboratory:

- ISM – Electrical Safety Review Corrective Action Follow-up – Three findings noted (GFCI Testing, Visitor Notification, Use of NFPA Hazard Categories) 25 areas for improvement noted.
- Isotope & Special Nuclear Material Corrective Action Follow-up – No findings noted, 8 areas for improvement noted.
- Validation of Corrective Actions for Accelerator Test Facility- NTS – No findings, 1 area for improvement noted.
- Quarterly Summary & Trend Analysis – 3rd Quarter FY06, No new trends identified- Three areas requiring management attention (Industrial Hygiene, Fire Protection, and Contamination Control).
- Quarterly Summary & Trend Analysis – 4th Quarter FY06, No new trends identified- Two areas requiring management attention (SER violations and Electrical Safety).
- ISM Conduct of Operations Program Review Corrective Action Phase 1 – Three findings (programmatic deficiencies) 7 areas for improvement noted.
- ISM Conduct of Operations Corrective Action Phase 2, Central Steam Facility- Four findings (Calibration, Damaged Gauges, LOTO, Training), 6 areas for improvement noted.
- ISM Conduct of Operations Corrective Action Phase 2, Central Chilled Water Facility Four findings (NEC Code violation, Calibration, LOTO, Training), 13 areas for improvement noted.